

# PATENTS SUMMARY

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Assignee: Pharmaceutical Technology

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Title:

DENTAL CARE CHEWING GUM AND ITS MANUFACTURING METHOD

Desc.:

Dental care chewing gum containing the western medicine flagyl or chlorhexidine and the Chinese medicine root of Zanthoxylum nitidum or Shiny bramble is claimed. The Chinese medicine may also be magnolia bark and honeysuckle. The chewing gum has inhibitory effects on oral anaerobes. The gum has oral cleansing, anti-inflammatory and dental plaque suppressant action. It is used to treat gingivitis, peridontitis and bad breath.

Key Words:

10 CHEWING GUM

20 Anticaries/Antiplaque (Gum)

21 Breath Freshening

25 Pharmaceutical

466 Spices/Herbs

467 Pharmaceutical Agents

504 Mixing/Gum Manufacture

525 Chemical Synthesis/Preparation

574 Health Benefit

600 ORAL HEALTH

601 Anticaries/Antiplaque/Anticalculus

602 Periodontal

605 Non-cariogenic Sweetener or Product

611 Breath Freshening

799 Other Company/Institution

839 China

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DENTAL CARE CHEWING GUM AND ITS  
MANUFACTURING METHOD [Jianchi  
kouxiangtang jiqi zhizuo fangfa]

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[54] Title: DENTAL CARE CHEWING GUM AND ITS MANUFACTURING METHOD

[57] Abstract: *The dental care chewing gum contains as its active principles both flagyl or chlorhexidine of western medicine and root of Zanthoxylum nitidum or shiny bramble of Chinese medicine. These medicines have a clear-cut inhibitory effect on oral anaerobes. The chewing gum also contains an appropriate amount of sugar and gum as basic ingredients and is made by a specific method. Clinical practice demonstrates that the inventive chewing gum has clear-cut oral cleansing, anti-inflammatory and dental plaque suppressant action. To a certain extent, it can protect the teeth from caries. It has special effects for sufferers from dental deformities and bad breath. In clinical practice, the product is used for patients of various ages, and is intended primarily to prevent and treat oral diseases such as gingivitis, periodontitis and bad breath. This inventive chewing gum is a novel popular health food product.*

BJ No. 1456

#### CLAIM

1. Dental care chewing gum containing sugar and gum as basic ingredients, characterized by the fact that it also contains both the western medicine flagyl or chlorhexidine and the Chinese medicine

Radix zanthoxyli (dried root of *Zanthoxylum nitidum*) or shiny bramble, which have clear-cut inhibitory effects on oral anaerobes and which are compounded with the following recipe (parts by weight):

flagyl or chlorhexidine	1-5 parts
root of <i>Zanthoxylum nitidum</i> or Shiny bramble	1500-5000 parts
gum base, flavor and sugar	2500-4500 parts

2. Dental care chewing gum in accordance with Claim 1, characterized by the fact that the Chinese medicine it contains consists of magnolia bark (*Cortex magnoliae officinalis*) and honeysuckle (*Flos lonicerae*).

3. Dental care chewing gum in accordance with Claims 1 and 2, characterized by the fact that the recipe used to prepare the inert ingredients (weight percentage) contains sugar 68-78%, food-grade gum base 22-32% and food-grade flavoring 0-0.5%.

4. Dental care chewing gum in accordance with Claim 3, characterized by the fact that it contains an appropriate amount of glycerol added according to taste.

5. Dental care chewing gum, characterized by the following manufacturing steps:

(1) first prepare a highly concentrated alcoholic liquid in accordance with western medicine;

(2) extract the Chinese medicine by alcohol extraction, repeating the extraction operation until the Chinese medicine becomes almost colorless, then collect the ethyl alcohol in the form of a dilute extract;

(3) while heating, compound the concentrated ethanolic liquid in accordance with western medicine, a small amount of liquid glucose and the Chinese medicine extract;

(4) blend to homogeneity the gum base, flavor and sugar with the above blend, then extrude, cool and package.

## SPECIFICATIONS

### DENTAL CARE CHEWING GUM AND ITS MANUFACTURING METHOD

The invention relates to a dental care chewing gum and to its manufacturing method.

As the standard of living rises, the human chewing function is becoming weak because today's foods are softer, more refined and acidified. The jaws and teeth are degenerating. In this process, the upper and lower jaws do not follow the same degeneration stages as the teeth. This causes a progressive syndrome in the teeth and jaws, ie, dental deformity, gingivitis, dental caries, etc. These diseases have become among the most frequently encountered diseases today, especially in the elderly and children. There is no ideal medicine to cure these ailments. The major dental care methods used today are mechanical means of oral cleansing, ie, tooth brushing, dental cleaning, scraping, straightening, etc. All these methods have clear-cut disadvantages. For example, the teeth cannot remain clean for a long time after they are brushed. Further, tooth brushing is not a convenient method. The method of teeth cleaning and scraping will never be a popular method of dental care. The use of medicine for dental care has also been tried in clinical treatment, for example, with the use of tablets and liquids for treating periodontitis, but the problem is that the use of tablets does not

supply an adequate drug concentration to a local area. Moreover, the drug is systemic and readily causes side effects, while taking liquid doses is not a convenient method.

The purpose of this invention is to offer a convenient dental care chewing gum to treat frequently encountered periodontal diseases, and a method of making this kind of chewing gum. The inventive chewing gum invented lends itself to popular use. It can improve oral hygiene, inhibiting both the growth of dental plaque and the multiplication of anaerobes in the mouth. By chewing the gum, one can clean the mouth and alleviate oral inflammation, thus achieving the purpose of dental care and reinforcement.

This invention has taken into account the following 3 points:

(1) Since most oral infections are caused by anaerobic bacteria, we have selected those drugs which specifically inhibit anaerobic bacteria, such as flagyl and chlorhexidine.

(2) Dental caries is due mainly to *Streptococcus mutans*, so we select those Chinese medicines which have special effects on dental caries such as shiny bramble, magnolia bark and honeysuckle (*Flos lonicerae*) etc.

(3) Patients with these diseases suffer from pain of inflammation, so we select the widely used Chinese medicine shiny bramble, etc, to ease the pain.

As the technical solution of this invention, we use drugs as the efficacious constituents plus an adequate amount of gum base and sugar. According to the distribution characteristics of the anaerobic bacteria in the mouth, we use as the active principles those drugs which can strongly inhibit anaerobic bacteria. These include flagyl or chlorhexidine, drugs used in western medicine, and *Zanthoxylum nitidum* or shiny bramble, drugs used in Chinese medicine. Then we add an appropriate amount of gum base, flavor and sugar and manufacture the chewing gum by a specific method. According to the drug concentration at which the drug becomes efficacious in inhibiting anaerobic bacteria, we simulate the oral release rate of drugs to determine the amount of drug to use. Through trial and error we determined the mixing ratio range for this invention. This range not only ensures an efficacious concentration of drugs in the saliva (for western medicine, greater than 2 mg/mL), but also avoids the side effects caused by the drug dispersed throughout the body (after using 20 tablets consecutively, there is no detectable amount of drug in the blood). Below are the ranges of mixing proportions by weight:

flagyl or chlorhexidine	1-5 parts (by weight, same hereinafter)
root of <i>Zanthoxylum nitidum</i> or shiny bramble	1500-5000 parts
gum base, flavor and sugar	2500-4500 parts

For this invention, the gum base and sugar are mainly used to adjust the color, flavor, taste and stickiness of the chewing gum. The sugar, flavor and gum base are used in the following proportions (percentages by weight):

sugar	68-78%
food-grade gum base	22-32%
food flavorings	0-0.5%

The sugar can be either sucrose or glucose. An adequate amount of glycerol can be added as a lubricant.

The manufacturing method of the invention includes the following steps:

- (1) first prepare a highly concentrated alcoholic liquid in accordance with western medicine;
- (2) extract the Chinese medicine by alcohol extraction, repeating the extraction operation until the Chinese medicine becomes almost colorless, then collect the ethyl alcohol in the form of a dilute extract;
- (3) while heating, compound the concentrated ethanolic liquid in accordance with western medicine, a small amount of liquid glucose and the Chinese medicine extract;
- (4) blend to homogeneity the gum base, flavor and sugar with the above blend, then extrude, cool and package.

Besides dried root of *Zanthoxylum nitidum* or shiny bramble, one can also use magnolia bark, honeysuckle (*Flos lonicerae*) or the like as the Chinese medicine constituents of the invention.

This invention has following advantages:

1. Convenience. The inventive chewing gum has the same flavor as the popular ordinary chewing gums. It has a sweet, fragrant aroma, a cool mouthfeel and can be chewed for an extended period. It can therefore be readily accepted by the public.
2. Clear-cut medication effect. Clinical trials in several hospitals show that this product is efficacious in more than 90% of the patients in inhibiting periodontitis and alleviating gingivitis. It is also efficacious in more than 94% of the patients in lowering the index of dental plaque. It has a more clear-cut effect than ordinary commercially available chewing gum in oral cleansing and suppressing bad breath. This product is applicable to the patients of various ages and can be used mainly to prevent and cure oral diseases (gingivitis, periodontitis and bad breath)
3. When chewing gum is chewed, the drugs dispersed throughout the gum are released gradually, so the drugs can maintain a certain local concentration in the mouth to prolong the drug effect.
4. This method uses smaller amount of drugs than ordinary oral medication, yet is more effective and safer.

#### Embodiment 1

##### Recipe:

flagyl	1 part
dried root of <i>Zanthoxylum nitidum</i>	1500 parts
gum base, flavor and sugar	2500 parts

##### Method:

Use a 95% alcoholic solution to extract shiny bramble until the material becomes almost colorless. Use 95% alcohol liquid to dissolve the flagyl until the liquid become saturated.

Blend the 2 kinds of liquid, let most of alcohol evaporate, add a small amount of liquid glucose (until the liquid become moderately sticky) and grind to homogeneity.

Put the well blended, sticky material into a heated pot. Add the food-grade gum base and granulated sugar and grind to homogeneity. (The heated pot should be set to a temperature at which the materials are in a soft state). Add the food flavorings and then proceed with extrusion, cooling and

packaging. According to an inspection, the product thus made complies with the food hygiene standards.

**Embodiment 2:**

**Recipe:**

flagyl	5 parts
shiny bramble	5000 parts
gum base, flavor, sugar	4500 parts

The method is the same as above.